

Webquest: An Instructional Aid in Learning Science  
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In the world of Information and Communication Technology (ICT), Webquests is one of the most fascinating applications for teachers. Student-centered and inquiry-based, a Webquest challenges students to explore the web for information. Rather than simply asking the students to research on a topic in irrelevant sites, the Webquest provides directed learning using a number of sites as sources of information.

By using Webquest in teaching science, students become involved in knowledge construction by proposing solutions to a real life problem, situation, or authentic tasks. It helps them develop skills for living in a knowledge-based, highly technological society. By bringing real-life context and technology to the curriculum through a project-based learning approach, students are encouraged to become independent workers, critical thinkers, and lifelong learners. Webquest is not just a way of learning, but also a way for students to work together. If students learn to take responsibility for their own learning, they will form the basis for the way they will work with others in their adult life.

Webquest also allows teachers to systematically document a student's progress and development. In making a Webquest, the teacher should see to it that the various parts are well- organized. A Webquest has the following working parts:

1. **Introduction** - gives an overview of the activity as well as the essential questions that the whole Webquest is centered around
2. **Task** - describes clearly what the end result of the learners' activities will be.
3. **Process** - refers to the steps that the learners should take to finish the task.
4. **Evaluation** - provides the learners details on how their performance will be evaluated.
5. **Conclusion** - summarizes the students' accomplishments.
6. **Credits and References** - list all the sources for images, music or text used in the Webquest.

These parts are illustrated in the sample Webquest for Gas Laws.



**“NEVER BEND”**  
**GAS LAWS WEBQUEST FOR THIRD YEAR HIGH SCHOOL STUDENTS**  
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### Introduction

Suppose you are the owner of a scuba diving school. In order for your students not to experience “bend” due to scuba diving, you need to make them aware of the different gas laws that works and definitely affect diving, such as Boyle's law, Charles' law, Dalton's law and Henry's law.

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### The Task

To prevent your student divers from experiencing “bend” or oxygen toxicity, you need to have a knowledge of the different gas laws. In order to have enough information about these laws, you need to perform the following tasks:

- Take the Scuba Quiz online
  - Determine what Scuba stands for and how it works.
  - Identify the Boyle's Law, Charles' Law, and Dalton's Law Equations.
  - Define "the bends," air embolisms, and oxygen toxicity.
  - Put together a tri-fold pamphlet to distribute to your student divers. The pamphlet must have a title page and an introduction to Scuba page. It should also contain one page each for "the bends," air embolisms, and oxygen toxicity. These pages should contain an explanation of the condition using the appropriate gas law, physiology, symptoms, and treatment. You may decide what to do with the remaining page.
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### Resources

SCUBA quiz site:

- <http://www.mtsinai.org/pulmonary/books/scuba/quiz.htm> SCUBA Quiz

Sites to help with Gas Laws:

- <http://dbhs.wvusd.k12.ca.us/GasLaw/KMT-Gas-Laws.html> Chem Team Web page
- <http://www.chemtutor.com/gases.htm> Chem Tutor Web page
- <http://www.chemfiesta.com/> Look for Gas Laws on Mr. Guch's Cavalcade of Chemistry
- Your notes from class on the gas laws

Sites to help with SCUBA info:

- <http://www.chm.bris.ac.uk/webprojects2001/meeraus/physicallaws.html> The Chemistry of SCUBA
- <http://www.pbs.org/ktca/newtons/11/bends.html> "The Bends"
- <http://www.howstuffworks.com/question101.htm> "The Bends"
- [http://www.drugbase.co.za/data/med\\_info/decompr.htm](http://www.drugbase.co.za/data/med_info/decompr.htm) Medical Information
- <http://scuba.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fwww.gulftel.com%2F%7Escubadoc> General Information on Scuba Medicine
- <http://www.mtsinai.org/pulmonary/books/scuba/sectionf.htm> Air Embolisms
- <http://www.gulftel.com/~scubadoc/o2tox.htm> Oxygen Toxicity
- <http://www.howstuffworks.com/question493.htm> Oxygen Toxicity

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## The Process

1. Working in a group of 2 - 3 people, first take the online Scuba quiz to find out what you know (and what you DON'T know) about Scuba diving and the gas laws.
  2. Next, take a look at the provided web sites to get some basic information on "the bends," air embolisms, and oxygen toxicity. Also, look at the web pages and your notes to make the connections with the gas laws.
  3. Start putting your pamphlet together. Remember that you need the following pages:
    - o title
    - o an introduction to Scuba page
    - o one page each for "the bends," air embolisms, and oxygen toxicity.
    - o one page that is up to you (this is your chance to be creative or give extra information)
  4. Make sure that you give credit to any web page or book author whose information you used in your pamphlet. You may also use pictures from the web, but once again, you must give credit.
  5. Turn in your pamphlet ON TIME!
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## Evaluation

You will be graded based on the rubric below:

Grade:	Requirements:
10	Neatly typed, organized. All required pages are present. Pamphlet shows creativity, and information on illnesses and gas laws is accurate, appropriate, and complete.
8	Neatly typed, organized. All required pages are present. Pamphlet shows creativity, and information on illnesses and gas laws is accurate, appropriate, and mostly complete.
6	Neatly typed, organized. Most of the required pages are present. Pamphlet gives information on illnesses and gas laws is accurate, appropriate, and mostly complete.
4	Neatly typed or handwritten, somewhat organized. Most of the required pages are present. Pamphlet gives some information on illnesses, with explanation on gas laws.
2	Lacking organization. Only a few of the required pages are present. Does not give clear information or presentation of the topic.

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## Conclusion

This lesson is a great way to know the various factors that affect you when diving under the sea. By completing this webquest you will also gain an understanding of how you can prevent "bends" or oxygen toxicity applying the different gas laws.

## Credits/ References

Encarta Encyclopedia. David Pilosof. Phototake NYC.

Weber, Jennifer. WebQuest Handout. Retrieved from

[http://learn.sdstate.edu/Jennifer\\_Weber/EDFN%20427/Old%20Middle%20School%20Files/EDFN%20427%20-%20Fall/WebQuest%20Handout.htm](http://learn.sdstate.edu/Jennifer_Weber/EDFN%20427/Old%20Middle%20School%20Files/EDFN%20427%20-%20Fall/WebQuest%20Handout.htm)

Meeks, Donna. Scuba Webquest. Retrieved from [http://wt2.cherokee.k12.ga.us/Donna.Meeks/scuba\\_webquest.htm](http://wt2.cherokee.k12.ga.us/Donna.Meeks/scuba_webquest.htm)